



HCE, LLC

2483 Oakton Hills Dr.
Oakton, VA 22124-1530
www.hceco.com

TEL: 703-242-1247
FAX: 703-783-7800

James Jordan, President
Louis Ventre, Jr., Exec. VP & General Counsel
Meyer Steinberg, VP and Chief Engineer
Udo von Wimmersperg, VP – R&D

PRESS RELEASE

Contact: Louis Ventre, Jr.
703-242-1247
ventre@hceco.com

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NEW TECHNOLOGY CREATES HYDROGEN STORAGE FORM SAID TO MIMIC GASOLINE

Oakton, VA. HCE, LLC James Jordan, President of HCE, announced today that it has filed for patent protection on a new device and method for hydrogen storage.

Jordan says, “This breakthrough concept provides a practical pathway for the use of hydrogen as a mobility fuel. Storage and distribution of hydrogen has been a vexing challenge long recognized by the science and technical community. HCE will be seeking partners and investors to demonstrate proof of principle and bring this remarkable and exciting concept to the market and financial fruition as rapidly as possible.”

“The invention is a new development and is quite unique,” says HCE’s Patent Attorney and Executive Vice President and General Counsel, Louis Ventre Jr. The invention is expected to permit the storage of gaseous hydrogen at room temperature in quasi-liquid form, having characteristics similar to gasoline.

The device creates nanometer-scale water bubbles filled with hydrogen gas. At this scale, surface tension can maintain the gas within a bubble at very high pressure, about equal to 43,500 pounds per square inch (3,000 atmospheres) inside the bubble. The smallness of such bubbles confers on them stability against gravitational aggregation and merging. The fluid is expected to be stored, distributed and handled like gasoline.

Existing hydrogen storage systems store hydrogen in high-pressure cylinders at about 3,600 pounds per square inch pressure (about 250 atmospheres). Some research labs are exploring very high-pressure storage at about 12,000 pounds per square inch (about 800 atmospheres).

HCE reports that hydrogen stored in the form created by its proprietary device and process is expected to have a volumetric energy density (higher heating value) from about 24 to 29 megajoules per liter. The stated range is attributable to uncertainties in compressibility and small-scale cohesion factors. This compares favorably with the energy density for gasoline at about 26 to 31 megajoules per liter.

The process is expected to have application to other high value gases made more usable in such a storage medium, such as natural gas a.k.a. methane and propane.